

WHAT IS CLAIMED IS:

1. A laser apparatus comprising:

a semiconductor laser element which emits a light beam with a spread in a slow-axis direction and a fast-axis direction;

a fast-axis collimating lens controls the spread in the fast-axis direction of the light beam emitted from the semiconductor laser element;

a reflector which returns the light beam emitted in the slow-axis direction in a specific angle range to the semiconductor laser element;

a reflector supporting member which supports the reflector; and

a side support member which supports the fast-axis collimating lens and the reflector supporting member in the slow-axis direction with respect to the semiconductor laser element.

2. The laser apparatus according to claim 1, further comprising:

a mount member on which the semiconductor laser element is mounted and which, together with the fast-axis collimating lens and the reflector supporting member, is integrally formed.

3. The laser apparatus according to claim 2, wherein the fast-axis collimating lens and the reflector supporting member are fixed to the mount member with adhesive.

4. The laser apparatus according to claim 2, wherein the fast-axis collimating lens and the reflector supporting member are welded to the mount member.

5           5. A laser system comprising:

          a laser apparatus;

          a slow-axis collimating lens which controls a spread in a slow-axis direction of a light beam emitted from the laser apparatus;

10           a condenser lens which condenses a light beam passed through the slow-axis collimating lens; and

          optical fiber to which the light beam passed through the condenser lens is directed, wherein the laser apparatus includes

15           a semiconductor laser element which emits a light beam with a spread in a slow-axis direction and a fast-axis direction,

          a fast-axis collimating lens which controls the spread in the fast-axis direction of the light beam emitted from the semiconductor laser element,

20           a reflector which returns the light beam emitted in the slow-axis direction in a specific angle range to the semiconductor laser element,

          a reflector supporting member which supports the reflector, and

25           a side support member which supports the fast-axis collimating lens and the reflector supporting member in

the slow-axis direction with respect to the semiconductor laser element, and

the optical axis of the slow-axis collimating lens, the optical axis of the condenser lens, and the optical axis of the optical fiber are fixed in such a manner that they coincide with a direction which, together with the direction of the light beam reflected from the reflector, is symmetric with respect to the central axis of the semiconductor laser element.

6. The laser system according to claim 5, further comprising:

a mount member on which the semiconductor laser element is to be mounted and which, together with the fast-axis collimating lens and the reflector supporting member, is integrally formed.

7. The laser system according to claim 6, wherein the fast-axis collimating lens and the reflector supporting member are fixed to the mount member with adhesive.

8. The laser system according to claim 6, wherein the fast-axis collimating lens and the reflector supporting member are welded to the mount member.

9. A laser apparatus manufacturing method comprising:

a first adjusting step of adjusting the position of a fast-axis collimating lens which controls a spread in a fast-axis direction of a light beam emitted from

a semiconductor laser element emitting a light beam with a spread in the slow-axis direction and the fast-axis direction;

5       a first fixing step of fixing the fast-axis collimating lens whose position has been adjusted in the first adjusting step to a side support member supporting in the slow-axis direction with respect to the semiconductor laser element;

10       a mounting step of mounting a reflector with a reflecting face on a reflector supporting member supporting the reflector;

15       a second adjusting step of adjusting the position of the reflector supporting member with respect to the semiconductor laser element so that a light beam emitted from the semiconductor laser element in the slow-axis direction in a specific angel range may be returned to the semiconductor laser element; and

20       a second fixing step of fixing the reflector supporting member whose position has been adjusted in the second adjusting step to the side support member.